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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,696	03/16/2004	Luc Adriaenssens	4799/0114PUS1	1659

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MCGRATH, GEISLER, OLDS & RICHARDSON, PLLC
P.O. BOX 1364
FAIRFAX, VA 22038-1364

EXAMINER

SEMENENKO, YURIY

ART UNIT PAPER NUMBER

-2841

DATE MAILED: 10/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/800,696	ADRIAENSSENS ET AL.	
	Examiner	Art Unit	
	Yuriy Semenenko	2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 39-50 and 56-97 is/are pending in the application.
- 4a) Of the above claim(s) 47-50, 58 and 64-97 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 39-46, 56, 57 and 59-63 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/22/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Amendment filed on 08/21/2006 has been entered.
In response to the Office Action dated 05/19/ 2006, Applicants have amended claims 64-97. Claims 47-50 and 58 and 64-97 are withdrawn from consideration.
Claims 1-38 and 51-55 had been cancelled.
Claims 39-50 and 56--97 are now pending in the application.

Election/Restrictions

2.1. In response to the Office Action dated 08/21/ 2006, Applicants have amended claims 64- 97 previously withdrawn from consideration pursue restriction requirements. Such amendment is not fully responsive to the prior Office Action because of the following omission(s) or matter(s):

Claims introduce limitations " a mating connector", "a modular jack housing" e.c.t. which is parts of connector (Specification (page 18, [048])). The connector's claims (Group II) had been withdrawn from consideration and canceled by Applicants in response to restriction requirements filed on 03/07/2006.

Examiner notes the amendments of the preambles of the claims 65-97 do not change the subject matter of withdrawn claims.

2.2. Previously submitted amended claims 64-97 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

2.2.1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- Group I. Claims 39-46, 56-57 and 59-63 drawn to a printed circuit board, classified in class 174, subclass 258.
- Group II. Claims 64-97 drawn to a printed circuit board, classified in class 174, subclass 258.

2.2.2. Inventions Group I are Group II related as subcombinations (printed circuit boards) disclosed as usable together in a single combination (a connector). The subcombinations are distinct if they do not overlap in scope and are not obvious variants, and if it is shown that at least one subcombination is separately usable. In the instant case, subcombination of Group I has separate utility such as in devices which does not required a printed circuit board with a second conductive path electrically connecting said second capacitor to said portion of said first contact of said plurality of contacts. See MPEP § 806.05(d).

2.2.3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

2.2.4. Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 64-97 withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

2.3. Claims 39-46, 56-57, and 59-63 are now under consideration.

Claims 47-50, 58 and 64-97 are now withdrawn from consideration.

Applicant's election with traverse of Group I, claims 39-46, 59-63 in the reply filed on 03/07/2006 is acknowledged. The traversal is on the ground(s) that:

1. Applicant added claims 64-97 to Group I.

This is not found persuasive because:

The inventions of Group I and added claims 64-97 are distinct, each from the other because of the following reasons as explained in Office Action dated 05/19/2006:

Inventions of claims 64-97 and invention of claims 39-46, 56-57 and 59-63 (Group I) are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of

the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed in claims 64-97 does not require the particulars of the subcombination as claimed because combination (an apparatus) may work without subcombination (a printed circuit board) as claimed in claims 39-50, 56-57 and 59-63 but instead of using a printed circuit board with second capacitors are not interdigital capacitor The subcombination (a printed circuit board (PCB) has separate utility such as in devices which does not required a second conductive path electrically connecting said second capacitor to said portion of said first contact of said plurality of contacts. Therefore, no further explanation or proof is necessary. Applicant must withdraw new claims 64-97 drawn to an apparatus as state in Office action dated 05/19/2006. The election of one invention following a requirement for restriction is mandatory even though applicant disagrees with the examiner.

The requirement is still deemed proper and is therefore made FINAL.

2.4. Applicant's election with traverse of Species I in the reply filed on 08/21/2006 is acknowledged. The traversal is on the ground(s) that: examiner did not contest Applicant's assertion. Applicants assertion concern to mutually exclusive Species are found persuasive.

However, election of the Specie would be effected to examination if Applicant have elected Group II (claims 64—97) directed to specie.

Nevertheless Group II (claims 64—97) of this application contains claims directed to the follow patentably distinct species of the claimed invention:

Specie I	Specification [0034] and Fig. 3(a), 4 (b): a single structured printed circuit board (PCB) with four substrates with the interdigital capacitors.
Specie II	Specification [023] and Fig. 1(a): printed circuit board (PCB) with five substrates.

Specie III	Specification [039], [040] and Fig. 4 (a): two cooperation printed circuit board (PCB)
Specie IV	Specification [032] and Fig. 2: printed circuit board with the plate-type capacitors.

Response to Arguments

3.1. Applicant's arguments filed 5/09/2005 have been considered but they are not persuasive.

3.2. In response to applicant's arguments against the references individually, Applicant cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant disagree with examiner conclusion: "...[s]o a first dielectric constant slope is different with a second dielectric constant slope". This statement follows from scientific principle that for two dielectric materials with different dielectric properties (dielectric constants, as taught by Aekins) having a different rates of change with frequency difference between two of the dielectric constants will be changing with frequency. (C. Kittel, Introduction to solid State Physics, Sixth edition). Also see admitted prior art Electronic Component and Technology Conference Fig. 2, page 751 showing changing of the Dielectric constant versus Temperature for different dielectric materials. And further such claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). In the instant case Aekins shows all of the structural limitations of the independent claims 39, 56, and 59. The prior art itself and in combinations with each other define the structure is capable of performing the intended use (a ratio of the first magnitude to the second magnitude varies with frequency to provide crosstalk compensation.), then it meets the

claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) AND *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

3.3. Applicant's arguments with respect to dependent claims 40-46, 57 and 60-63 are not persuasive as based on arguments with respect to independent claims 39, 56 and 59 as discussed above.

Drawings

4. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the informal drawings are not of sufficient quality. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Objections

5. Claims 41 and 60 are objected.

Claims 41 and 60, line 2: There is not any information about limitation " the first rate of decline is about 0.2 per decade of frequency..." in Specification.

Appropriate correction is required.

Specification

6. The disclosure is objected to because of the following informalities: there is not any information concern to " the first rate of decline is about 0.2 per decade of frequency..." as recited claims 41 and 60.

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 39 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10845104. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 1 discloses a ratio of the first magnitude of the first compensation structure to the second magnitude of the second compensation structure varies with frequency and claim 1 of copending Application No. 10845104

discloses limitation "the second compensation structure having increased capacitance with increasing frequency" and still reads on claim 1.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8.1. Claim 39-46, 56, 57 and 59-63 are rejected under 35U.S.C. 103(a) as being unpatentable over Aekins (Patent # 6057743) hereinafter Aekins in view of Ninomiya (PGPub #2001/0048592) hereinafter Ninomiya.

As to claim 39: Aekins discloses in Fig. 1 a printed circuit board 20 for providing crosstalk compensation in an electrical connector 10, comprising: a plurality of

conductive traces 22- 28; a first compensation structure 30a providing a first crosstalk compensation signal having a first magnitude to a first 22 of the plurality of conductive traces; and a second compensation structure 30b providing a second crosstalk compensation signal having a second magnitude to the first 22 of the plurality of conductive traces,

except Aekins does not teach a ratio of the first magnitude to the second magnitude varies with frequency.

Ninomiya teaches using for high-speed signal line decoupling capacitor with material with dielectric constant different to dielectric constant of the material for capacitor for low-speed line (for power supply) (page 3, [0048], [0049] and [0050]). In such structure a ratio of the first magnitude to the second magnitude varies with frequency. Aekins also teaches that crosstalk signals can be controlled by appropriate adjustment of the dielectric constant of the printed wiring board (column 4, lines 44-54), at time the invention was made, it was well know to use for different signal lines compensation structures with different magnitudes.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Aekins to include in his invention a ratio of the first magnitude to the second magnitude varies with frequency, as taught by Ninomiya to provide crosstalk compensation.

As to claim 56: Aekins discloses in Fig. 1 a printed circuit board 20 for an electrical connector 10, the printed circuit board comprising: a plurality of conductors 22-28; a first capacitor (capacitor included in first compensation structure 30a), electrically connected to a first of the conductors 22, the first capacitor having a first dielectric with a first dielectric constant slope; and a second capacitor (capacitor included in second compensation structure 30b) electrically connected to the first of the conductors 22 (the first of the conductors 22 electrically connected to the second capacitor though the first compensation structure 30a), the second capacitor having a second dielectric with a second dielectric constant slope.

except Aekins does not teach a first dielectric constant slope is different with a second dielectric constant slope.

Ninomiya teaches using for high-speed signal line decoupling capacitor with material with dielectric constant different to dielectric constant of the material for capacitor for low-speed line (for power supply) (page 3, [0048], [0049] and [0050]). So a first dielectric constant slope is different with a second dielectric constant slope.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Aekins to include in his invention a first dielectric constant slope is different with a second dielectric constant slope as taught by Ninomiya to provide crosstalk compensation.

Although, Aekins does not explicitly teach that a difference between the first dielectric constant slope and the second dielectric constant slope is at least 0.15 per decade of frequency, but materials which applicant teaches to use in present application such as FR-4 or Teflon or Nelco was well-known to use for substrate for PCB as evidenced by Pai et al. (PGPub #2003/0174484) hereinafter Pai (page 4, [0032]). All of this materials are capable of performing the intended use (provide a difference between the first rate of decline and the second rate of decline is in the range of about 0.15 to about 0.45 per decade of frequency) and then it meets the claim 56. See *In re Casey*, 152 USPQ 235 (CCPA 1967) AND *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Aekins to include in his invention that wherein a difference between the first dielectric constant slope and the second dielectric constant slope is at least 0.15 per decade of frequency, motivated by its known suitability for its intended use. See MPEP §2144.07.

As to claim 59: Aekins discloses in Fig. 1a printed circuit board 20 comprising: a plurality of conductive paths 22-28 that extend from a plurality of respective inputs 11-14 of said printed circuit board 20 to a plurality of respective outputs 15-18 of said printed circuit board; a first compensation stage 30a for capacitively coupling crosstalk compensation having a first polarity onto a first path 22 of said plurality of conductive

paths, said first compensation stage including at least one first capacitive element (capacitor included in first compensation structure 30a) that includes a first dielectric constant material that has a first rate of change with frequency; and a second compensation stage 30b for capacitively coupling crosstalk compensation having a second polarity onto said first path 22 of said plurality of conductive paths, said second compensation stage including at least one second capacitive element (capacitor included in second compensation structure 30b) that includes a second dielectric constant material that has a second rate of change with frequency.

except Aekins does not teach that a first rate of change with frequency is different with the second rate of change with frequency.

Ninomiya teaches using for high-speed signal line decoupling capacitor with material with dielectric constant different to dielectric constant of the material for capacitor for low-speed line (for power supply) (page 3, [0048], [0049] and [0050]). So a first rate of change with frequency is different with the second rate of change with frequency.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Aekins to include in his invention first rate of change with frequency is different with the second rate of change with frequency ^{as taught by Ninomiya} to provide better crosstalk compensation. AR 10/16/06

Although, Aekins does not explicitly teach that the first rate of change and the second rate of change differ by between about 0.15 to about 0.45 per decade of frequency but materials which applicant teaches to use in present application such as FR-4 or Teflon or Nelco was well-known to use for substrate for PCB as evidenced by Pai et al. (PGPub #2003/0174484) hereinafter Pai (page 4, [0032]). All of this materials are capable of performing the intended use (provide that the first rate of change and the second rate of change differ by between about 0.15 to about 0.45 per decade of frequency) and then it meets the claim 59. See In re Casey, 152 USPQ 235 (CCPA 1967) AND In re Otto, 136 USPQ 458, 459 (CCPA 1963).

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Aekins to include in his invention that wherein the first rate

of change and the second rate of change differ by between about 0.15 to about 0.45 per decade of frequency, motivated by its known suitability for its intended use. See MPEP §2144.07.

Although, Aekins does not explicitly teach a first compensation stage 30a for capacitively coupling crosstalk compensation having a first polarity and a second compensation stage 30b for capacitively coupling crosstalk compensation having a polarity opposite the first polarity, Applicant recited in specification (page 17, [046]) that deploying of oppositely polarized two compensation stages is a conventional 2-stages compensation system (page 4, [0048]).

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made to include in the invention of Aekins a first compensation stage for capacitively coupling crosstalk compensation having a first polarity and a second compensation stage for capacitively coupling crosstalk compensation having a polarity opposite the first polarity to remove the noise component, according to Fourier's wave theory and Maxwell's theory of electromagnetic fields (Aekins, Background of the Invention).

As to claims 40-45, 57, 60, 61, 62: Aekins, as modified, discloses a printed circuit board having all of the claimed features as discussed above with respect claim 39 (56, 59), the first compensation structure comprises a capacitor (capacitor included in first compensation structure 30a, Fig.1) that includes a first dielectric constant material having a first rate of decline with frequency, and wherein the second compensation structure comprises a capacitor (capacitor included in first compensation structure 30a, Fig. 1) that includes a second dielectric constant material having a second rate of decline with frequency,

except Aekins does not teach a first rate of decline with frequency is different with a second rate of decline with frequency.

Ninomiya teaches using for high-speed signal line decoupling capacitor with material with dielectric constant different to dielectric constant of the material for capacitor for low-speed line (for power supply) (page 3, [0048], [0049] and [0050]). So a

first rate of decline with frequency is different with a second rate of decline with frequency.

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Aekins to include in his invention a first rate of decline with frequency is different with a second rate of decline with frequency.

Although, Aekins does not explicitly teach that a difference between the first rate of decline and the second rate of decline is in the range of about 0.15 to about 0.45 per decade of frequency, as claimed in claim 40, or the first rate of decline is about 0.2 per decade of frequency across the frequency range of 1 MHz to 1GHz. as claimed in claim 41, or the first rate of decline is about 0.4 per decade of frequency across the frequency range of 1 MHz to 1GHz. as claimed in claim 42, the second rate of decline is substantially flat with frequency across the frequency range of 1 MHz to 1GHz. as claimed in claim 43, but materials which applicant teaches to use in present application such as FR-4 or Teflon and Nelco was old and well-known to use for substrate for PCB as evidenced by Pai et al. (PGPub #2003/0174484) hereinafter Pai (page 4, [0032]). All of this materials are capable of performing the intended use (provide a difference between the first rate of decline and the second rate of decline is in the range of about 0.15 to about 0.45 per decade of frequency, as claimed in claim 40, or the first rate of decline is about 0.2 per decade of frequency across the frequency range of 1 MHz to 1GHz. as claimed in claim 41, or the first rate of decline is about 0.4 per decade of frequency across the frequency range of 1 MHz to 1GHz. as claimed in claim 42, the second rate of decline is substantially flat with frequency across the frequency range of 1 MHz to 1GHz. as claimed in claim 43) and then it meets the claims. See *In re Casey*, 152 USPQ 235 (CCPA 1967) AND *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Aekins to include in his invention that a difference between the first rate of decline and the second rate of decline is in the range of about 0.15 to about 0.45 per decade of frequency, as claimed in claim 40, or the first rate of decline is about 0.2 per decade of frequency across the frequency range of 1 MHz to 1GHz. as

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claimed in claim 41, or the first rate of decline is about 0.4 per decade of frequency across the frequency range of 1 MHz to 1GHz. as claimed in claim 42, the second rate of decline is substantially flat with frequency across the frequency range of 1 MHz to 1GHz. as claimed in claim 43. Motivated by its known suitability for its intended use. See MPEP §2144.07.

As to claim 63: Aekins, as modified, discloses a printed circuit board having all of the claimed features as discussed above with respect claim 59, wherein the first and second rates of change are pre-selected to reduce the near-end crosstalk on said first path of said plurality of conductive paths in the 1 MHz to 100 MHz frequency range (column 1, lines 27-46) when a plug is electrically connected to said plurality of respective inputs.

Although, Aekins does not explicitly teach to use a high crosstalk plug is electrically connected to said plurality of respective inputs in the 1 MHz to 100 MHz frequency range and to use a low crosstalk plug is electrically connected to said plurality of respective inputs at frequencies above 250 MHz, Applicant discloses in the "Background of the invention" section, at the time the invention was made, it was well know to use a high crosstalk plug is electrically connected to said plurality of respective inputs in the 1 MHz to 100 MHz frequency range and to use a low crosstalk plug is electrically connected to said plurality of respective inputs at frequencies above 250 MHz (specification, page 3, [006]).

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Aekins to include in his invention that wherein the first and second rates of change are pre-selected to reduce the near-end crosstalk on said first path of said plurality of conductive paths in the 1 MHz to 100 MHz frequency range (column 1, lines 27-46) when a high crosstalk plug is electrically connected to said plurality of respective inputs, and to reduce the near-end crosstalk on said first path of said plurality of conductive paths at frequencies above 250 MHz when a low crosstalk plug is electrically connected to said plurality of respective inputs to satisfy standards of Electronic Industry association (EIA) as taught by Aekins (Page 1, 27-35).

As to claim 46: Aekins, as modified, discloses a printed circuit board having all of the claimed features as discussed above with respect claim 39 ,
Although, Aekins does not explicitly teach the first crosstalk compensation signal and the second crosstalk compensation signal have different polarities and wherein a time delay is present between the first and second compensation signals, Applicant recited in specification (page 17, [046]) that deploying of oppositely polarized two compensation stages is a conventional 2-stages compensation system (page 4, [0048]).

Therefore it would have been obvious to one of ordinary skill in the art, at time the invention was made for Aekins to include in his invention that the first crosstalk compensation signal and the second crosstalk compensation signal have different polarities and wherein a time delay is present between the first and second compensation signals to remove the noise component, according to Fourier's wave theory and Maxwell's theory of electromagnetic fields (Aekins, Background of the Invention).

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yuriy Semenenko whose telephone number is (571) 272-6106. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean A. Reichard can be reached on (571)- 272-2800 ext. 31. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YS


DEAN A. REICHARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800 10/14/06